THE CLAIMS

The following claims are pending in the application.

LISTING OF CLAIMS

1. (previously presented) A method of reducing exhaust emission from a catalytic converter apparatus of a vehicle, the apparatus including at least one catalytic converter, each of the at least one catalytic converter having a catalyst brick positioned within a predefined length of the vehicle, said method comprising directing exhaust in upstream and downstream directions to pass more than once through the predefined length through at least one of the at least one catalyst brick.

2. (original) The method of claim 1 performed at least while the exhaust has a low exhaust pressure.

3. (original) The method of claim 1 wherein the at least one catalyst brick includes at least one catalyst, said method further comprising effecting a transfer, to the at least one catalyst, of heat remaining in exhaust that has passed at least once through the predefined length.

4. (original) The method of claim 3 wherein effecting a transfer of heat comprises directing exhaust to flow between the catalyst brick and a canister wall of said at least one catalytic converter.

5. (previously presented) The method of claim 1 wherein directing exhaust to pass more than once through the predefined length comprises directing exhaust to pass at least twice through said at least one catalyst brick.

6. (original) The method of claim 5 wherein directing exhaust to pass at least twice through said at least one catalyst brick comprises directing exhaust to pass at least twice through the same catalyst brick.

7. (original) The method of claim 1 wherein the catalytic converter apparatus includes a plurality of catalytic converters connected in parallel to receive the exhaust, said method further comprising directing the exhaust through a series connection of the converters for a predetermined time period after starting the vehicle.

8. (original) The method of claim 7 further comprising closing said series connection and opening said parallel connection after said time period.

9. (previously presented) A method of reducing exhaust emission from a catalytic converter apparatus including a catalytic converter having a catalyst surface area to which the exhaust is exposed while making a pass-through of the apparatus, said method comprising effecting a transfer, to a central core of said catalyst surface area and of said converter, of heat remaining in the exhaust after being exposed to said central core.

10. (original) The method of claim 9 further comprising:

limiting said catalyst surface area to less than a total surface area to which the exhaust is exposed during the pass-through of the apparatus; and

effecting a transfer of heat from the total surface area to the limited catalyst surface area.

11. (original) The method of claim 10 wherein effecting a transfer of heat from the total surface area comprises effecting a transfer of heat from at least one of a canister wall and a ring of catalytic surface area surrounding the limited catalytic surface area of said catalytic converter.

12. (original) The method of claim 9 wherein effecting a transfer of heat is performed while the exhaust completes the pass-through.

13. (original) The method of claim 9 performed at least while the exhaust has a low exhaust pressure.

14. (previously presented) A catalytic converter apparatus in a motor vehicle, said apparatus comprising:

at least one catalytic converter, each of said at least one catalytic converter having a catalyst brick positioned within a predefined length of the vehicle; and

at least one directing element that directs exhaust from the motor in upstream and downstream directions to pass more than once through the predefined length through at least one of said at least one catalyst brick.

15. (original) The converter apparatus of claim 14 wherein said at least one directing element effects a transfer of heat from the exhaust to one of said at least one converter.

16. (original) The converter apparatus of claim 14 wherein said at least one catalyst brick comprises at least one cross-sectional area, said at least one directing element comprising a sleeve forming an inlet to said catalyst brick and that directs the exhaust toward at least a portion of said at least one cross-sectional area.

17. (original) The converter apparatus of claim 16 wherein said sleeve comprises a door that opens or closes in response to a pressure of the exhaust.

18. (original) The converter apparatus of claim 16 wherein said sleeve comprises at least one of a cylindrical shape and a truncated conical shape.

19. (original) The converter apparatus of claim 14 wherein said at least one directing element comprises a bowl mounted at least partly over an outlet of said catalyst brick.

20. (original) The converter apparatus of claim 19 wherein said at least one catalyst brick comprises at least one cross-sectional area and said bowl directs the exhaust toward at least a portion of said at least one cross-sectional area.

21. (original) The converter apparatus of claim 19 wherein said bowl directs the exhaust to flow alongside said catalyst brick.

22. (original) The converter apparatus of claim 19 wherein said bowl comprises a door that opens or closes in response to a pressure of the exhaust.

23. (original) The converter apparatus of claim 14 further comprising at least one canister in which said at least one catalyst brick is mounted, said at least one directing element comprising at least one end wall of said canister.

24. (original) The converter apparatus of claim 14 wherein said at least one catalytic converter comprises a plurality of converters connected in parallel, said at least one directing element comprising a switching assembly that alternates connection of said converters between said parallel connection and a series connection of said converters.

25. (previously presented) A catalytic converter apparatus comprising:

a catalytic converter having a catalyst surface area to which exhaust is exposed while making a pass-through of said apparatus; and

at least one directing element that effects a transfer, to a central core of said catalyst surface area and of said converter, of heat remaining in the exhaust after being exposed to said central core.

26. (original) The converter apparatus of claim 25 wherein said catalyst surface area is comprised by a catalyst brick and said at least one directing element directs the exhaust to flow within said converter apparatus a distance in addition to a length of said catalyst brick.

27. (original) The converter apparatus of claim 25 wherein said at least one converter comprises a catalyst brick, said at least one directing element comprising a sleeve forming an inlet to said catalyst brick and that directs the exhaust toward at least a portion of a cross-sectional area of said catalyst brick.

28. (original) The converter apparatus of claim 27 wherein said sleeve comprises at least one of a cylindrical shape and a truncated conical shape.

29. (original) The converter apparatus of claim 27 wherein said sleeve comprises a door that opens or closes in response to a pressure of the exhaust.

30. (original) The converter apparatus of claim 25 wherein said at least one converter comprises a catalyst brick, said at least one directing element comprising a bowl mounted at least partly over an outlet of said catalyst brick.

31. (original) The converter apparatus of claim 30 wherein said bowl directs the exhaust toward at least a portion of a cross-sectional area of said catalyst brick.

32. (original) The converter apparatus of claim 30 wherein said bowl directs the exhaust to flow alongside said catalyst brick.

33. (original) The converter apparatus of claim 30 wherein said bowl comprises a door that opens or closes in response to a pressure of the exhaust.

34. (original) The converter apparatus of claim 25 wherein said at least one converter comprises a catalyst brick mounted in a canister, said at least one directing element comprising at least one end wall of said canister.